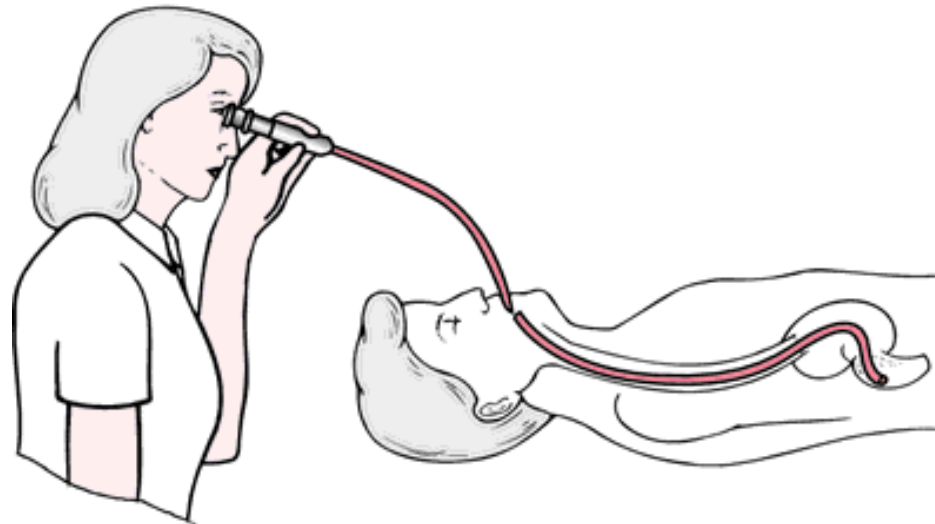


# Mavaraee Fonoon Asr Gastroenterology Products

**MAFA**  
GROUP

# Endoscopy

Endoscopy comes from the Greek word "**scopy**," meaning "**look**" and "**endo**," meaning "**within**".



# Types of Endoscopy Systems

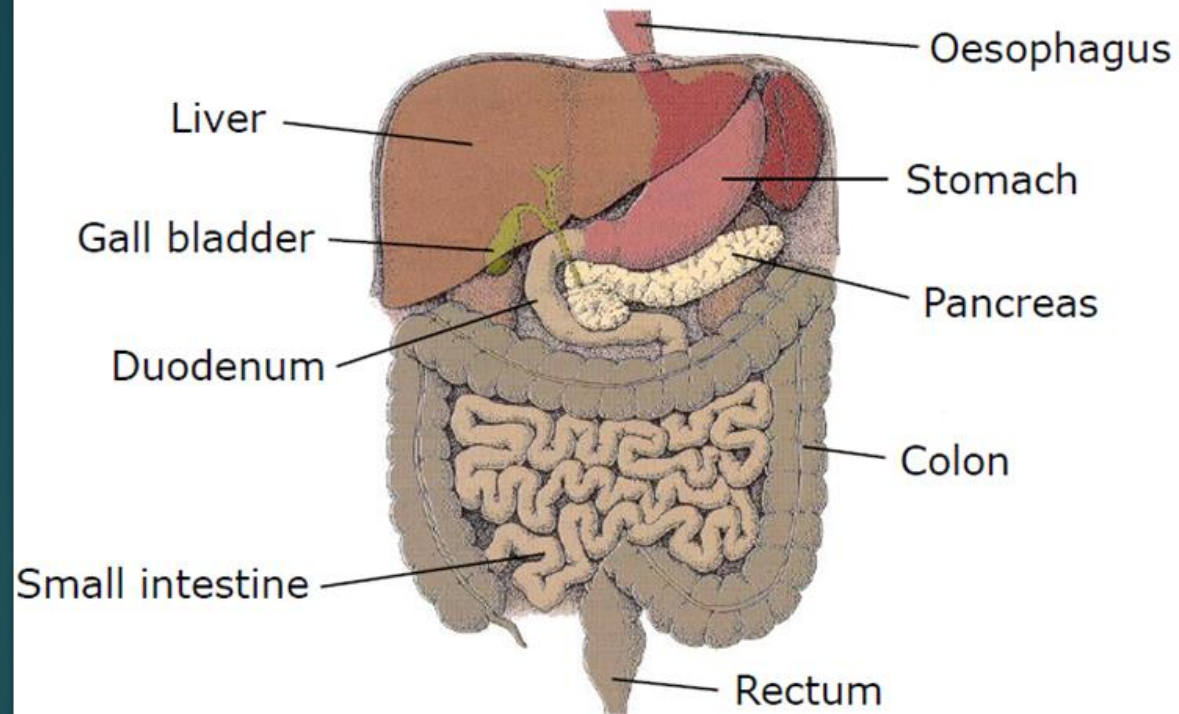
## ► Flexible Endoscopy



## ► Surgical Endoscopy



## Gastrointestinal Tract



## Application

### ► GI Tract

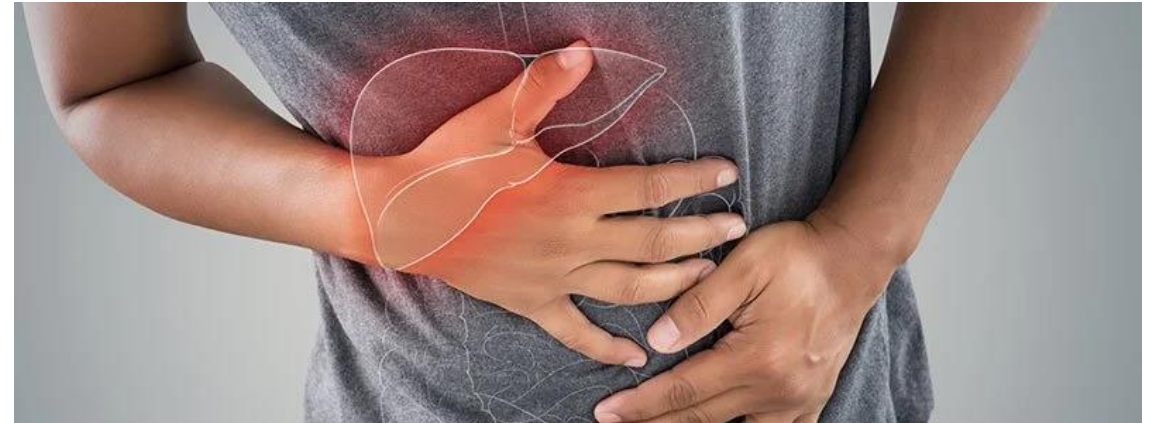
- Mouth
- Pharynx
- Esophagus
- Stomach
- Small Intestine
- Large Intestine

### ► Organs

- Liver
- Gallbladder
- Pancreas

# Indications

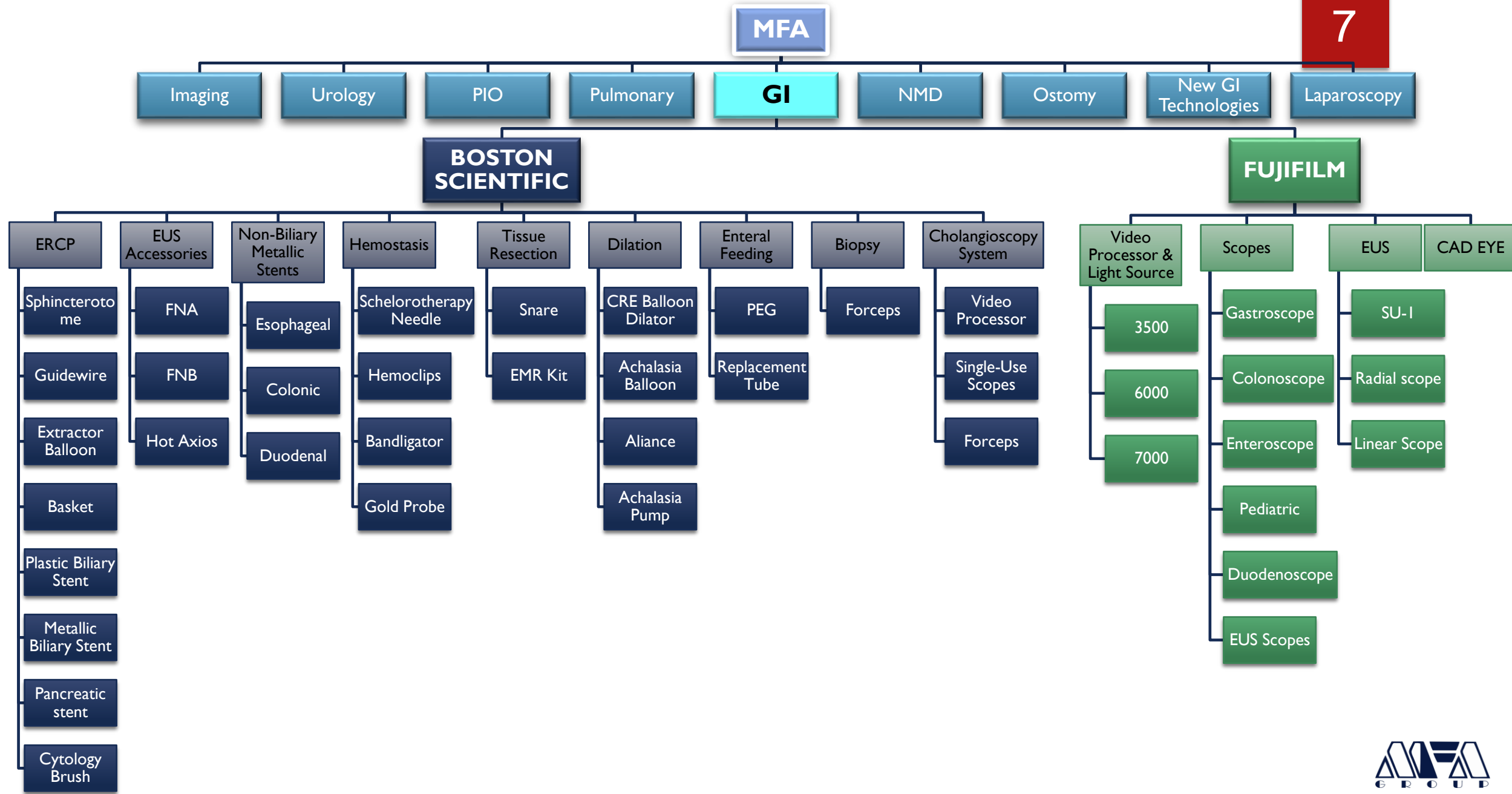
- ▶ Vomiting (Frequently)
- ▶ Abdominal Pain
- ▶ Difficulty in swallowing
- ▶ Gastrointestinal bleeding
- ▶ Inflammation in organs





# Endoscopy Treatment

- ▶ Diagnostic by endoscope
- ▶ Taking Biopsy
- ▶ Hemostasis
- ▶ Removal of Polyps
- ▶ Widening narrow Lumens
- ▶ Diagnostic and treatment of biliary disease





# FUJIFILM



# Types of Endoscopy

- ▶ Gastroscopy
  - ▶ Stomach and duodenum, which is the beginning of the small intestine
- ▶ Colonoscopy
  - ▶ Entire length of the colon and large intestine
- ▶ Duodenoscopy
  - ▶ ERCP
- ▶ Bronchoscopy
  - ▶ Trachea, or windpipe, and the lungs
- ▶ Enteroscopy
  - ▶ Small Intestine
- ▶ Ultrasound Endoscopy

# Typical Setup of an Endoscopy System

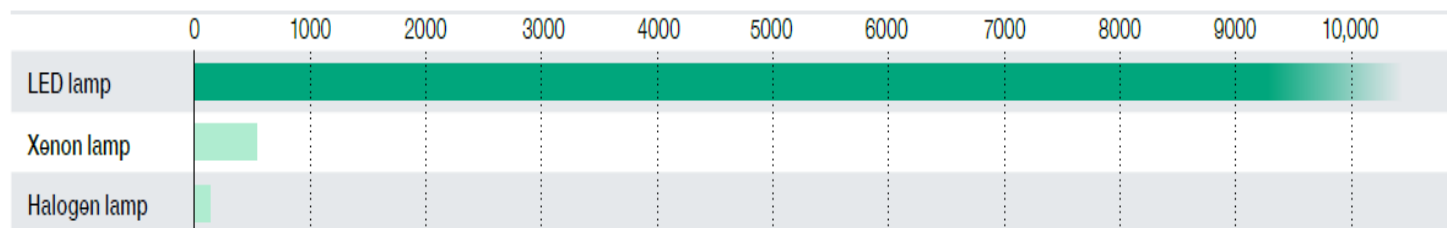
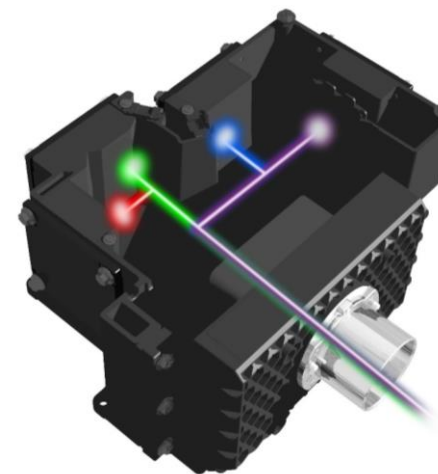
- ▶ Video Processor
- ▶ Light Source
- ▶ Monitor
- ▶ Endoscope (gastroscope, colonoscope, ...)
- ▶ Water Pump
- ▶ Trolley



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# What an endoscopy system must be able to; LIGHT SOURCE

- ▶ Light Source: Halogen, Xenon (100,150,300), LED (single, multi)
- ▶ Durability of Lamp: Depends on light source
- ▶ Lighting System
- ▶ Light Cooling Method
- ▶ Special Light Observation Mode
- ▶ Air Supply: Pump
- ▶ Water Supply



# What an endoscopy system must be able to; VIDEO PROCESSOR

- ▶ Screen Resolution: SD, HD, Full HD, 4K
- ▶ Image Enhancement:
  - ▶ FUJIFILM: FICE, BLI, LCI
- ▶ Zoom
- ▶ Color Adjustment
- ▶ Compatibility
- ▶ Digital & Analog Output

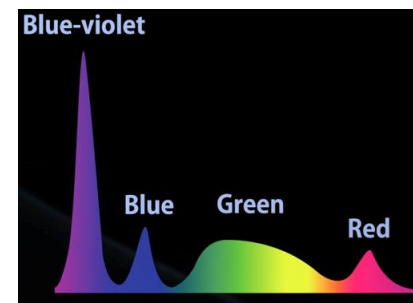
# Image Enhancement Methods



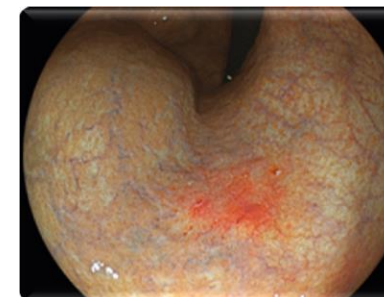
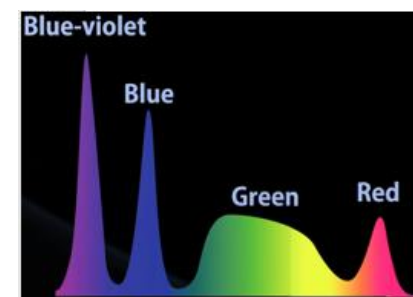
Flexible spectral imaging color enhancement



Blue Light Imaging



Linked Color Imaging





# Fujifilm Processors and Light Sources

## ELUXEO 7000



❖ 4 LED Light Bulbs

❖ Image Enhancement: BLI/LCI, FICE

❖ Compatibility: 500, 600, and 700

## ELUXEO Lite 6000



❖ 3 LED Light Bulbs

❖ Image Enhancement: BLI/LCI, FICE

❖ Compatibility: 500, 600, and 700

## EPX-3500HD



❖ 300W Xenon Lamp

❖ Image Enhancement: FICE

❖ Compatibility: 500 and 600

# Important Properties Endoscopes

- ▶ Observation Range
  - ▶ Close focus: 2-100 mm
- ▶ Field of View
- ▶ Working Channel
- ▶ Insertion Tube Outer Diameter
- ▶ Bending Capability
- ▶ Optical Sensor: CCD, Super CCD, CMOS
- ▶ Water Jet: Optical
- ▶ Compatibility

# Regular Endoscopes

## Gastroscope

Working channel: 2.8 mm

OD: 9.2 mm

Working Length: 1100 mm

## Colonoscope

Working channel: 3.8 mm

OD: 12.0 mm

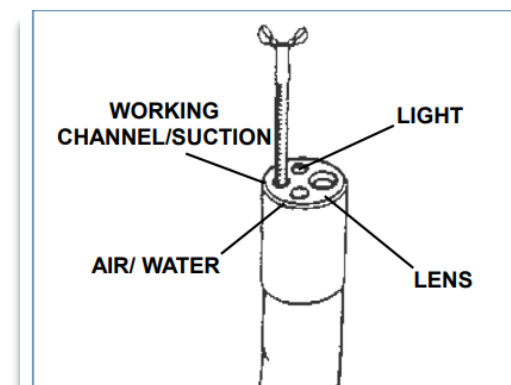
Working Length: 1690 mm

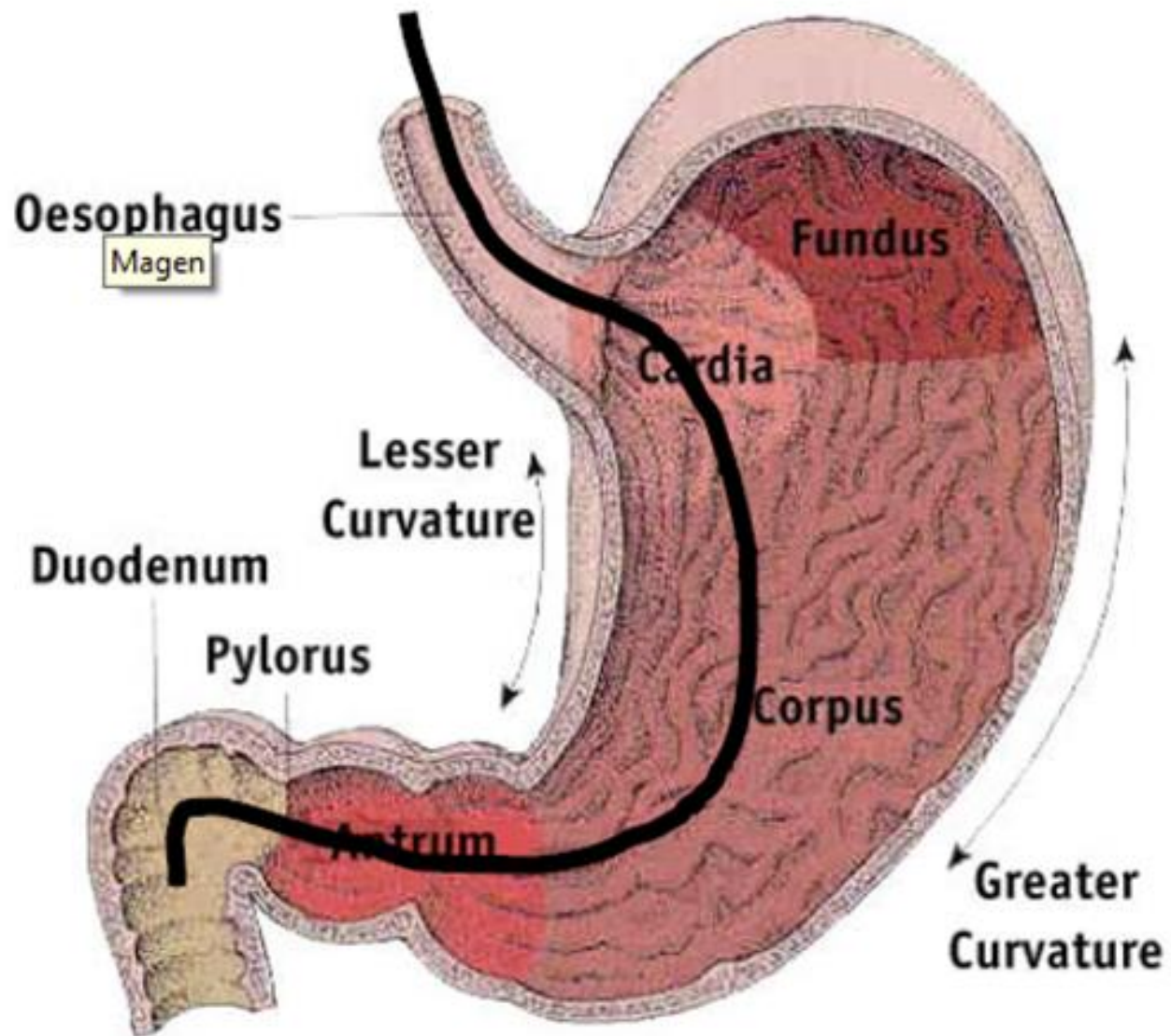
## Duodenoscope

Working channel: 4.2 mm

OD: 13.1 mm

Working Length: 1250 mm





# Gastrosocopy

# Types of Gastroscope

- Routine gastroscope
- Transnasal gastroscope
- Therapeutic gastroscope
- Two-channel gastroscope
- Ultrasound gastroscope
- Zoom gastroscope





# FUJIFILM Regular Gastrosopes

EG-530WR



EG-600WR



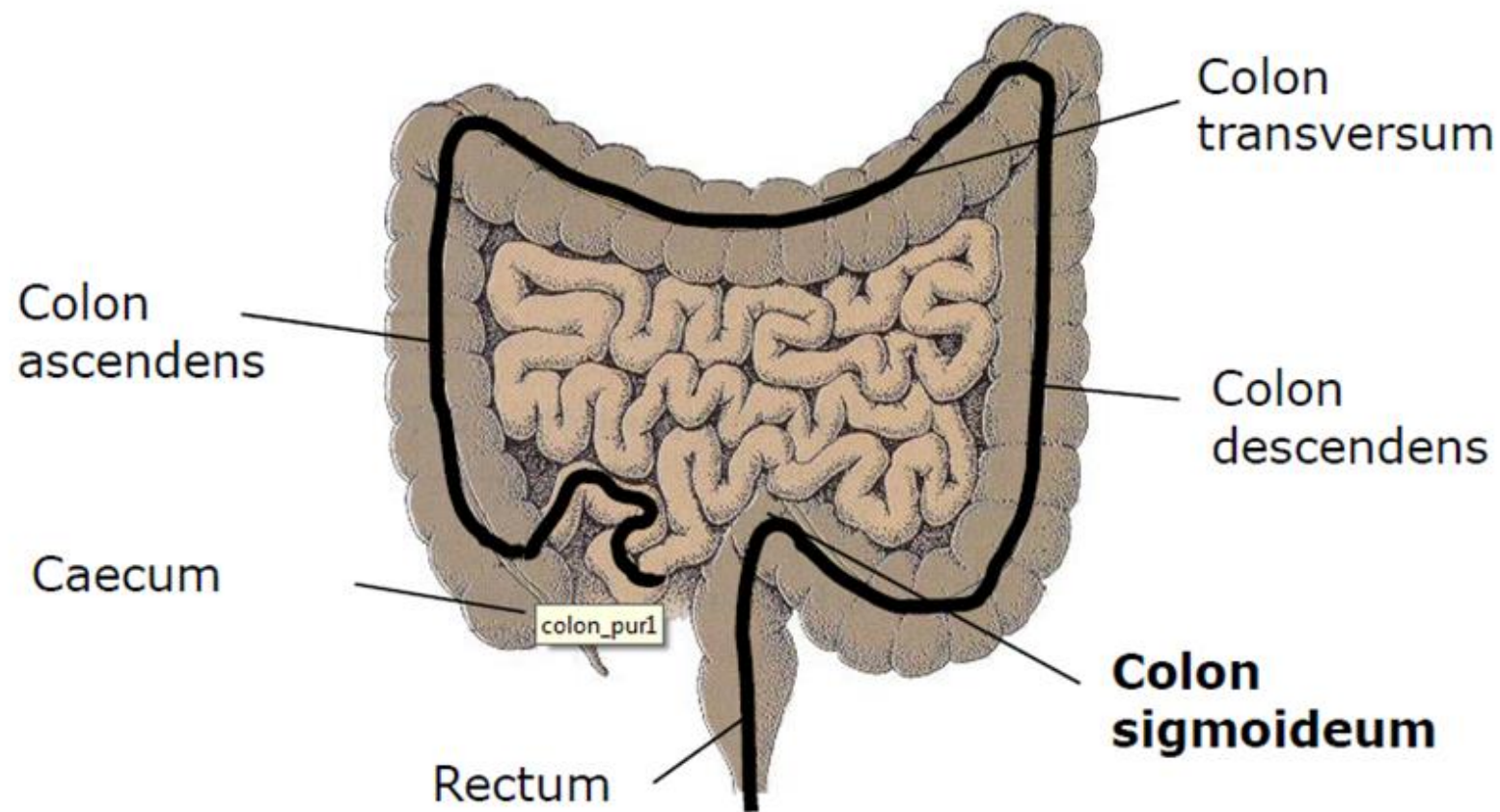
EG-720R



EG-760R



Observation range (mm)	4-100	2-100	2-100	2-100
Distal end diameter	9.4	9.2	9.2	9.2
Forceps channel diameter	2.8	2.8	2.8	2.8
Bending capability (Up/Down-R/L)	210/90 100/100	210/90 100/100	210/90 100/100	210/90 100/100
Water jet	no	yes	no	yes
Image sensor	Super CCD	CMOS	CMOS	CMOS
Image enhancement compatibility	FICE	FICE	FICE/BLI/LCI	FICE/BLI/LCI



# Colonoscopy

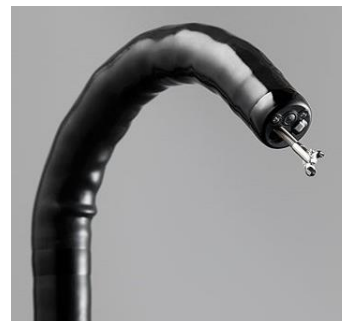
# FUJIFILM Regular Colonoscopes

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**EG-530WL3**



**EC-600WL**



**EC-720RL**



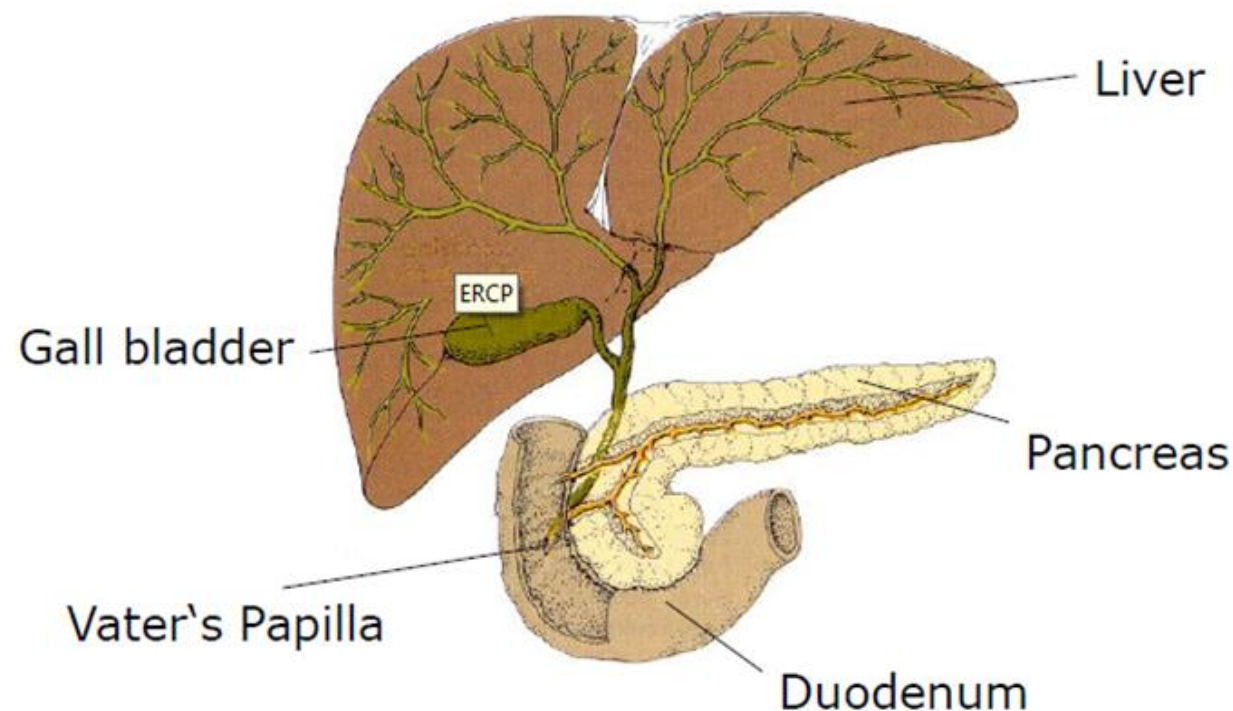
**EC-760RL**



Observation range (mm)	3-100	2-100	2-100	2-100
Distal end diameter	12.8	12	12.8	12
Field of view	140	140	170	170
Bending capability	180/180 160/160	180/180 160/160	180/180 160/160	180/180 160/160
Water jet	yes	yes	yes	yes
Image sensor	Super CCD	CMOS	CMOS	CMOS
Image enhancement compatibility	FICE	FICE	FICE/BLI/LCI	FICE/BLI/LCI

# Pancreas/Biliary System

- ▶ **Endoscopic retrograde cholangiopancreatography (ERCP):** is an endoscopic procedure used to identify stones, tumors, or narrowing in the bile ducts.
- ▶ After the endoscope is properly placed, a catheter is advanced which will inject a contrast agent through the ducts. The contrast is visible on X-rays, and allows a physician to evaluate the caliber, length and course of the ducts.



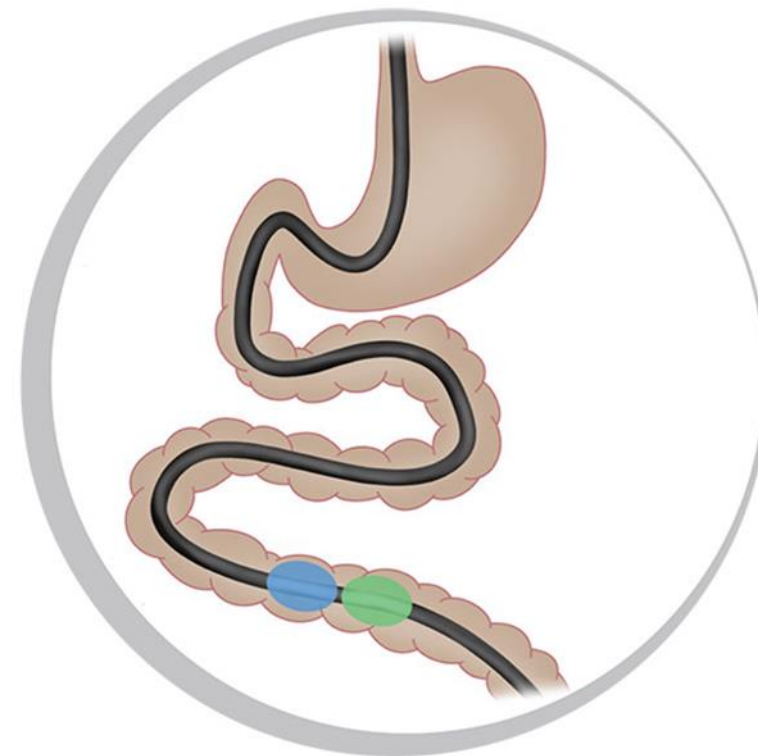


## ED-580XT Duodenoscope



# Enteroscopy

- ▶ Enteroscopy is a procedure to examine the small intestine (small bowel) and treat issues at the same time. This part of the intestine is over 20 feet long and just 1 inch wide, which makes it difficult to access. There are several techniques a gastroenterologist may use to gain access deep into the small intestine, including video capsule endoscopy, double balloon enteroscopy, single balloon enteroscopy and spiral enteroscopy. Balloon enteroscopy and spiral enteroscopy are collectively known as deep enteroscopy.

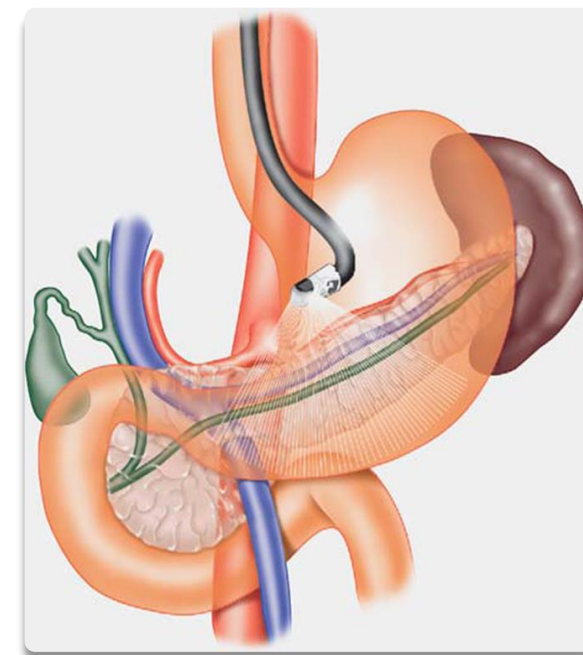


# Double Balloon Enteroscopy



# Endoscopic Ultrasound

- ▶ EUS combines endoscopic visualization with radiology (high frequency ultrasound) to visualize extraluminal lesions and individual layers of the GI tract
- ▶ EUS provides the ability to see lesions, organs, major vessels, fluid collections, nodes, etc. that aren't visible endoscopically



# Endoscopic Ultrasound

- ▶ Enables visualization of organs outside of GI tract
- ▶ Enables biopsy (FNA/FNB) on any lesion identified
- ▶ Highly accurate for diagnosis and staging of tumors adjacent to GI tract
- ▶ Highly accurate detecting stones in the bile duct.
- ▶ Helps to drive the patient treatment algorithm

# System Overview

## Ultrasonography System



EG-580UT



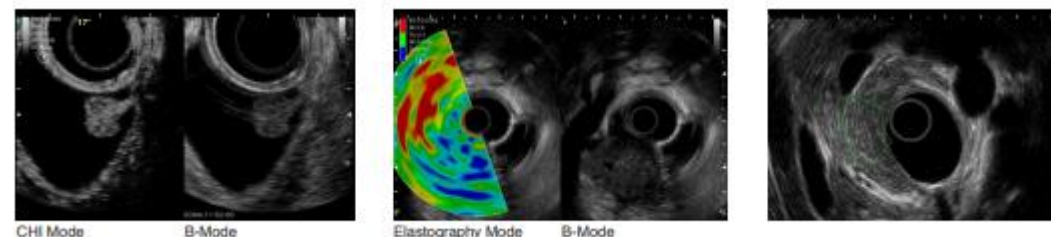
EG-580UR





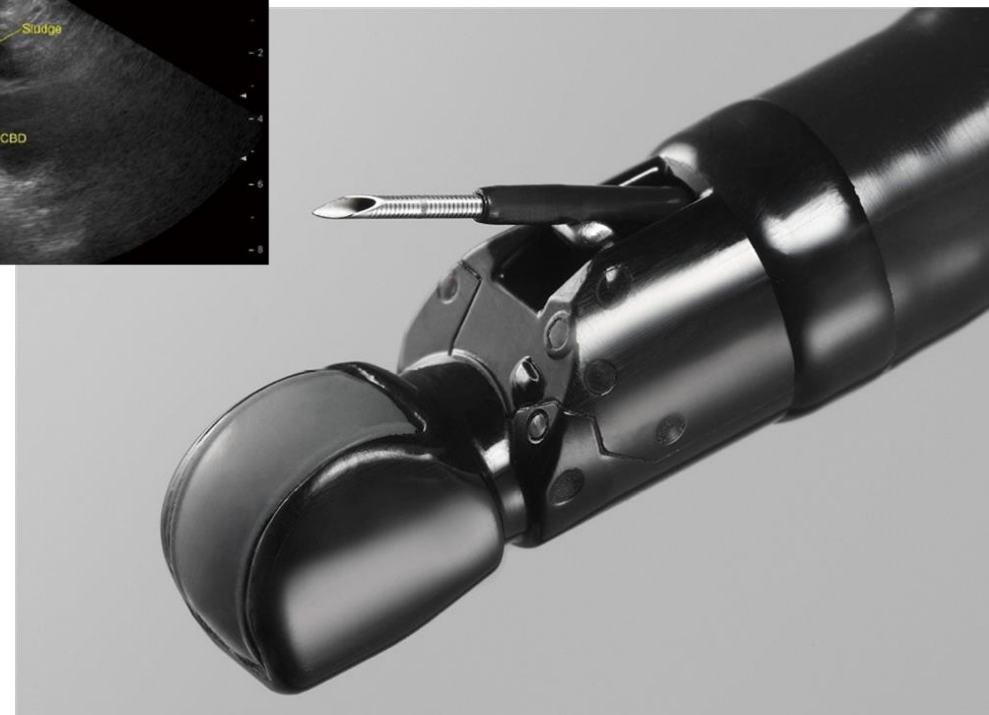
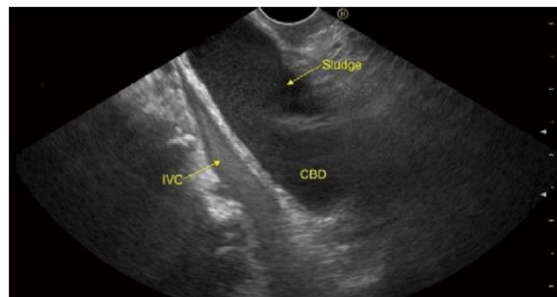
# SU-1

- ▶ High-resolution B-mode images
- ▶ Various imaging modes:
  - ▶ THI (Tissue Harmonic Imaging) Mode
  - ▶ CH (Compound Harmonic) Mode
  - ▶ CHI (Contrast Harmonic Imaging) Mode
  - ▶ Elastography Mode
  - ▶ Sound Speed Correction Mode
- ▶ User-friendly keyboard



# EG-580UT

- ▶ Good maneuverability
- ▶ Shorter rigid part/Small compact distal
- ▶ head design and Bending with small radius
- ▶ Powerful 150°bending capability in UP angulation
- ▶ Wider FNA range (8°—40°)
- ▶ Best positioning of ultrasound transducer on distal end



# EG-580UR

- ▶ 190° upward bending capability supports enhanced maneuverability
- ▶ Slim distal end diameter of 11.4mm supports improved insertion performance

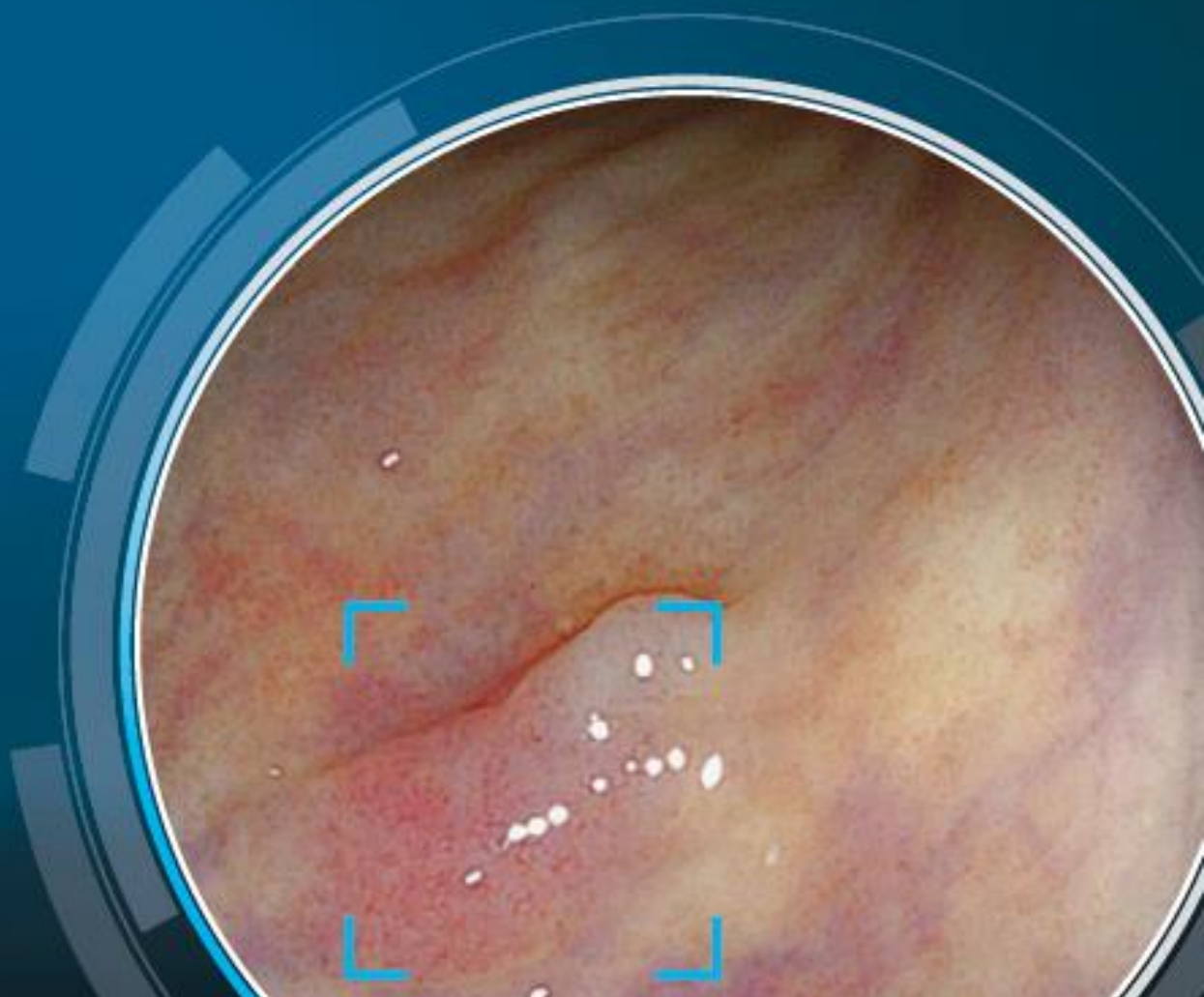






**CADEYE**

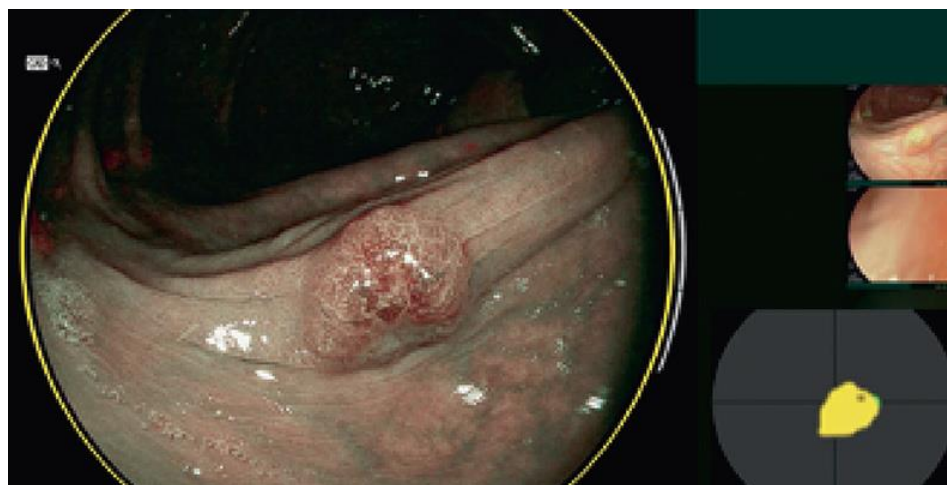
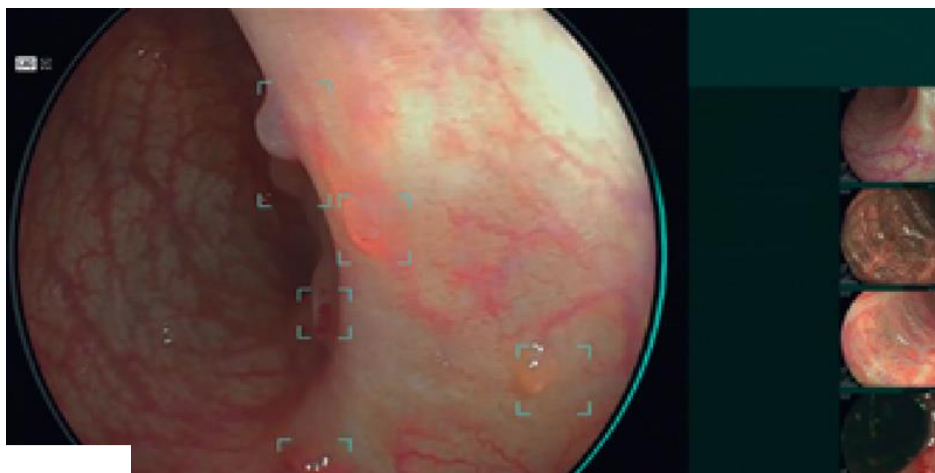
COLONIC POLYP DETECTION



# CAD EYE

## AI Technology

- ▶ Compatible with ELUXEO and ELUXEO lite systems
- ▶ Compatible with 700 series scopes
- ▶ Detection & Characterization



Thank you